Clinical Medicine – letter, in response to DOI: https://doi.org/10.7861/clinmed.2020-0149:

Commented [ER1]: •Opinion: The article should debate issues with an emphasis on the health economic balance and practicality of delivery, not just clinical justification.
•Opinion articles should be **1,000–1,500 words** in length, with **15 references** maximum.

Evaluation of a patient self-stratification methodology to identify those in need of shielding during COVID-19

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Word count:

Key message: Patients can risk stratify themselves accurately using the BSR COVID-19 risk stratification guidance.

Dear Editor,

Corona virus 2019 (COVID-19) has presented a unique constellation of clinical, logistical and ethical challenges for Rheumatology. There have been concerns that patients with rheumatic and musculoskeletal disease (RMD) diseases receiving conventional synthetic (cs-), biological (b-) or targeted synthetic (ts-) disease modifying anti-rheumatic drugs (DMARDs) may have an increased risk of COVID-19, based upon previous experience in this population with infectious diseases (1). Furthermore, patients with multisystem diseases such as Connective Tissues Diseases (CTD) and vasculitis may be at particular risk in view of their potential coexistent respiratory or renal

compromise (2-4). The need to urgently identify and provide guidance to those at highest risk was supported by the publication of guidance and risk assessment tools by NHS England and The British Society for Rheumatology (BSR) (5, 6). These documents provided a framework to approach risk assessment and stratification; with those designated 'high risk' given advice on 'shielding'. Whilst early signals from Wuhan, China, and Italy had so far appeared to demonstrate reassuringly low numbers of cases of COVID-19 in those with immunodeficiency or on immunosuppressants, BSR produced clear guidance that these factors should be considered relevant in assessing patients' risks of COVID-19 until further, unequivocal evidence demonstrated otherwise, a view held by many clinicians and hence the adoption of their stratification process.

The logistical challenge of undertaking this rapidly in a large population were unprecedented (7). We report our experiences of meeting this challenge for >9,000 RMD patients managed at our centre, based upon the BSR guidance for identifying those at high risk of COVID-19 and in need of shielding. Our principal aim was to deliver accurate and timely risk-stratification for COVID-19 precautionary measures for a large cohort of patients.

In order to complete this task quickly and efficiently, we took a step-wise approach:

1. Undertake individualised assessment of those on bDMARDs and advise them of their personalised risk and related guidance;
2. Contact patients with CTD and vasculitis advising them to adopt shielding measures (to 'shield'); accepting some low-moderate risk patients would be included.
3. Contact patients with CTD-associated pulmonary arterial hypertension and/or interstitial lung disease (ILD) with advice 'to shield'
4. Devise a risk stratification tool to be sent out to all remaining RMD patients enabling them to score their own risk level accurately.

We initially prioritised assessment of those on biologics, identified through our biologics database. CTD and vasculitis cases were identified though EPR (Electronic Patient Record) text mining and clinic lists, and shielding letters were sent accordingly (8). A total of 1622 patients on b/tsDMARDS and 474 patients with CTD/vasculitis were sent letters with their individualised risk stratification by 7th April 2020.

Commented [RS2]: Can we mention that we as HCPs scored all the biologic patients through review of their case notes.

In order to reach other potentially at-risk patients from our cohort with RMD, a further 7,517 patients with RMD registered under our care within the last 2 years, were identified through EPR text mining of clinical correspondence. They were sent comprehensive information guiding them through a process of self-stratification based on BSR guidance. There were two parts to this: a paper scoring method with instructions for the patient to work through and a link to an internet platform. Our online platform guided patients through the risk stratification matrix, to identify their risk group and also prompted patients to enter the score they had calculated using the paper risk matrix. The latter method enabled us to capture patients' self-scoring and add them to the central list of shielding patients. To validate the reliability of the patient self-scoring method, 100 consecutive patients were contacted in telephone clinics and asked how they scored themselves. They were then re-scored by a rheumatologist.

Of 100 patients called, 97 had received the letter and stratified their risk. Eighty-nine had estimated their risk correctly and 31 had not assessed themselves using the web portal. The reasons given for not using the web portal were that they felt sufficiently informed already or that it was too complex.

Of the 7,517 RMD patients who were sent guidance on self-scoring, 910 (13%) logged onto the web platform to complete the online process over the first 4 weeks. Table 1 shows how patients scored themselves using each method; 72% scored themselves consistently by both methods.

We report the systematic approach in contacting our RMD patient cohort with personalised guidance to help them protect themselves during the COVID-19 pandemic, based upon the process produced by BSR. Our step-wise process enabled us to issue prompt guidance for those at the highest risk, and adopt a more nuanced assessment for those with other risk factors. Our follow-up telemedicine reviews indicated that most patients felt they had been supplied with sufficient information via letter to safely manage their risk. Those using the web portal represented a small proportion of our patient cohort with inherent selection bias. Nonetheless, our analysis suggests patients could applied the risk stratification algorithms effectively. Further work on identifying barriers to engagement in web-based patient reporting is required but could provide an excellent way of assessing disease and risks remotely, in a time where face to face contact needs to be minimised. Barriers encountered in trying to achieve this process in a timely and accurate way have suggested the need for new, innovative methods, such as mobile-phone based systems, consensus agreement on the minimum data capture for clinical databases and fully integrated technology, to facilitate contacting patients quickly should the need arise due to future pandemics.

In conclusion, we report the application of a multi-layered approach comprising individual case note review, rule-based methods (e.g. PAH and ILD), and postal/web-based patient self-stratification to promptly risk stratify >9000 RMD patients from a single centre. Our results indicate that patients are able to risk stratify themselves accurately using the BSR COVID-19 risk stratification guidance, enabling them to take precautionary measures to modify their risk of contracting COVID-19. While we cannot be sure that our efforts have led to complete coverage of those who need to shield, an analysis of data from the NHS spine, has reassured us that, at the time of writing, no patient on b/tsDMARDS from our cohort has died of COVID-19.

Table 1: Results of patients' self-scoring using both the paper and web based COVID19 scoring methods

Scoring method	High risk (Shielding) N, % using method	Moderate risk (Strict Social Distancing) N, % using method	Low risk (Standard Social Distancing) N, % using method
Online risk matrix	99 (11%)	208 (23%)	603 (66%)
Paper risk matrix	165 (18%)	281 (31%)	464 (51%)

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